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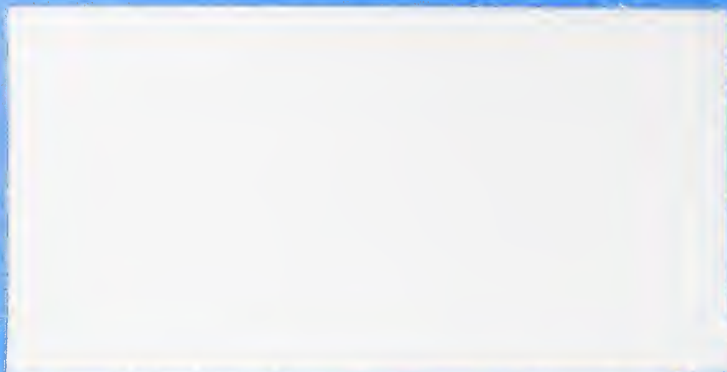
Hydrometrics
(Firm : Helena,
Mont.)
Ames-Peterson
Coal Reclamation
Project,
Beaverhead County,

FINAL REPORT
2 AMES-PETERSON COAL RECLAMATION PROJECT
BEAVERHEAD COUNTY, MONTANA
MONT A/E 88-46-125 Final report

 Hydrometrics, Inc.

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FINAL REPORT
2 AMES-PETERSON COAL RECLAMATION PROJECT
BEAVERHEAD COUNTY, MONTANA
MONT A/E 88-46-125 *Final report*

PLEASE RETURN

for

Department of State Lands
1625 Eleventh Avenue
Capitol Station
Helena, MT 59620

by

HYDROMETRICS, INC.
2727 Airport Road
Helena, MT 59601
406/443-4150

February 1990

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FINAL REPORT
AMES-PETERSON COAL RECLAMATION PROJECT
BEAVERHEAD COUNTY, MONTANA
MONT A/E 88-46-125

I. INTRODUCTION

A) PROJECT OBJECTIVES

The Ames-Peterson Coal Reclamation Project consisted of reclamation work undertaken on 11 small mine sites to close hazardous mine openings, reclaim spoil piles and remove trash and debris. Specific work items on all sites consisted of debris cleanup, salvage and replacement of topsoil, waste pipe disposal, grading and cleanup, and fertilizing, seeding and mulching of disturbed surfaces. Additionally, a stock fence was constructed around each site to protect newly revegetated areas. Two 24-inch diameter CMP culverts were installed and approximately 300 lineal feet of road was constructed to provide access to Work Areas No. 7 and No. 8. Mine adits at each work area were closed by dozing or pushing spoils into the adit. In several of the work areas, it was first necessary to clear away the portal.

B) HISTORY

For a history on the 11 work areas, please refer to historical data submitted as a separate report in 1987 by Historic Research Associates (HRA), in Butte, Montana.

C) PROJECT LOCATION

The project is in the Medicine Lodge Creek Valley, approximately 39 miles southwest of Dillon, Montana. Work Area Nos. 1 through 6, inclusive and Work Area No. 10 are located on state land in Township 11 South, Range 12 West, Section 36. The land is leased for grazing purposes by Mr. Roger D. Peters. Work Area Nos. 7 and 8 are located in Township 11 South, Range 12 West, Section 35 on Federal lands administered by the United States Department of Interior, Bureau of Land Management. The Bureau of Land Management (BLM) maintains a Dillon, Montana office (Bureau of Land Management, P. O. 1048, Dillon, MT 59725). The local BLM contact is Mr. Ken Thacker.

Work Area No. 9 is located in Township 12 South, Range 12 West, Section 14 on Federal land administered by the Bureau of Land Management's Dillon office.

Work Area No. 11 is on Hanson Livestock property in Township 11 South, Range 12 West, Section 28.

D) SITE DESCRIPTION AND PROBLEMS

Work Area No. 1

Work Area No. 1 is approximately 20 miles from Clark Canyon Dam and approximately 1000 feet west of Medicine Lodge Creek Road. Work Area No. 1 contained a small waste mound of approximately 840 cubic yards and a small partially open adit southeast of the mound. Work at the site consisted of removing the waste mound and mucking it into the

nearby adit to the extent possible. The balance was then placed in the proposed fill area immediately downslope of the adit. Other work on the site consisted of salvaging available topsoil, debris cleanup, finish grading, liming, fertilizing, seeding and mulching. Upon completion of all work within the work area, a farm fence was constructed around the perimeter of the site to exclude cattle until new vegetation is well established.

Work Area No. 2

Work Area No. 2 is approximately 2000 feet northwest of Work Area No. 1. Work Area No. 2 consisted of a small waste mound of approximately 55 cubic yards of materials and a small depression located immediately upslope from the mound. Debris was burned or buried, the waste mound was removed and mucked into the depression which was then covered with salvaged topsoil. The graded area was then limed, fertilized, mulched, seeded and fenced.

Work Area No. 3

Work Area No. 3 is approximately 1500 feet west of Work Area No. 2. Work Area No. 3 contained a small waste mound and a larger area covered by a veneer of waste directly downslope from the mound. The volume of waste at both sites was approximately 730 cubic yards. Debris was burned or buried, then the waste mound and shallow waste were removed and mucked into the nearby adit and adjacent fill area. The ground surface was then contoured and covered with salvaged topsoil. The area was then limed, mulched, fertilized, seeded and fenced.

Work Area No. 4

Work Area No. 4 is approximately 300 feet northwest of Work Area No. 3. Work Area No. 4 consisted of one small waste mound and one very small waste mound with a combined total volume of about 270 cubic yards. There were two adits located above the larger waste mound. Both adits were opened, the waste material was mucked into the openings and the excess was placed in nearby fill areas.

Salvaged topsoil was placed over the contoured areas and the site was limed, mulched, fertilized, seeded and fenced.

Work Area No. 5

Work Area No. 5 is approximately 200 feet north of Work Area No. 4. Work Area No. 5 consisted of a small waste mound and a large shallow (thin veneer) waste area located directly below the mound. The approximate volume for this site was 715 cubic yards. The open adit was directly above the mound. The adit was opened, then waste material was mucked into the opening. Additional waste material was placed in nearby surface depressions and contoured. Salvaged topsoil was placed over the filled areas and all disturbances were limed, mulched, fertilized, seeded and fenced.

Work Area No. 6

This work area is approximately 200 feet north of Work Area No. 5. Mining disturbance at this site consisted of a small waste mound with a shallow waste area (approximately 4-inches deep) adjacent to the mound.

Another small 4-inch deep, shallow waste area (approximately 50-feet by 50-feet) was located nearby. A small partially open adit was upslope from the waste mound.

The adit was fully opened, waste material was then mucked inside and the excess waste placed in a nearby surface depression. Material from the nearby (approximately 50 feet by 50 feet) waste area was loaded into a dump truck and hauled to Work Area No. 7 for disposal. Salvaged topsoil was used to cover the graded waste material and the site was limed, mulched, fertilized, seeded and fenced.

A problem occurred during fertilizing when an unknown adit caved beneath the fertilizer spreader. This adit was opened completely with a backhoe and backfilled. Work was then completed on the area.

Work Area No. 7

Work Area No. 7 is approximately 1000 feet northwest of Work Area No. 6. Mine disturbance at this work area consisted of a large waste pile and a small, shallow waste area (approximately 4-inch depth). A small partially caved adit was located above the waste mound.

Debris was burned or buried and waste material was mucked into the adit with the remaining waste being placed in a nearby surface depression. Salvaged topsoil was replaced, then the site was limed, fertilized, mulched, seeded and fenced.

Work Area No. 8

Work Area No. 8 is 150 feet south of Work Area No. 7. Mine disturbance at this work area consisted of a small waste mound of approximately 385 cubic yards and a small adit northwest of the mound. This site also contained minor amounts of metal and wood debris left over from the mining operation.

Debris was burned or buried and waste material was mucked into the adit with the remaining waste being placed in a nearby surface depression. Salvaged topsoil was replaced, then the site was limed, fertilized, mulched, seeded and fenced.

Work Area No. 9

Work Area No. 9 is approximately 3.1 miles south of Work Area No. 1 and is adjacent to the Medicine Lodge Creek Road. Mining disturbance at this site consisted of a small waste mound, plus a large shallow waste area with an approximate thickness of 5-inches located east of the waste mound. Also, a small (approximately 50 feet by 50 feet) shallow waste area was approximately 350 feet west of the waste mound. A partially open adit was on the hillside above the spoils piles. This site also contained several items of wood and metal debris leftover from the former mining operation.

Debris was burned or buried and waste material was mucked into the adit with the remaining waste being placed in a nearby surface depression.

Salvaged topsoil was replaced, then the site was limed, fertilized, mulched, seeded and fenced.

Work Area No. 10

This area was immediately adjacent to Work Area No. 5 and consisted of an adit opening and a small area of shallow waste. This adit was found during construction and added as extra work. Waste material was mucked into the adit and contoured. Topsoil was replaced over the fill area then limed, fertilized, mulched and seeded. Work Area No. 10 was fenced together with Work Area No. 5.

Work Area No. 11

Work Area No. 11 was assigned by the Department of State Lands (DSL) in early August 1989 as extra work. The site is approximately two miles northwest of Work Area No. 8 and consisted of a small adit and two small waste piles. The adit was opened and then backfilled with waste material. The remaining waste was placed in nearby surface depressions, limed, covered with salvaged topsoil, fertilized, mulched, seeded and fenced.

II. DESCRIPTION OF RECLAMATION PROJECT

A) PROJECT PLANNING

Major items of work addressed the elimination of safety hazards and environmental degradation by closing partially caved portals, burying

coal slack piles, removing miscellaneous mining debris and revegetating the sites.

B) CHRONOLOGICAL HISTORY

- ° February 6, 1987. Project is assigned by DSL.

- ° March and April 1987. Signed Consents for Right of Entry obtained from DSL's Surface Management Bureau. Surface and mineral lessee determinations also made during this period. There were no current mineral lessees. Surface lessees were advised of intent to inventory sites.

- ° May 26, 1987. Initial site visit conducted with DSL representative (Ben Mundie), BLM representative (Ken Thacker) and cultural resources consultant (Janene Caywood, Historical Research Associates, Butte, MT). Purpose of visit was to record nature and extent of the mining disturbances and to discuss the reclamation required.

On-site quantity surveys conducted by Hydrometrics during the week of June 8, 1987.

- ° July 27, 1987. Seed mixes and rates recommended by Mr. Glen Green, Soil Conservation Service, Dillon office are confirmed.

- ° August 19, 1987. Samples of representative coal wastes and adjacent soils (one each) are submitted to laboratory for agricultural lime requirement and acid-base balance determinations. Samples were collected by Ken Thacker, BLM, when he was in the area to save on project costs.
- ° September 8, 1987. BLM Acting Area Manager (Mr. Fred Stokke) requests 24-inch diameter culvert installations on Keystone Gulch be made permanent.
- ° August 21, 1987. Draft plans and specifications for reclamation of the Ames and Peterson sites are submitted to the DSL and the BLM for review and comment.
- ° November 1, 1987. Program narrative describing reclamation work proposed and estimated construction cost is submitted to DSL.
- ° November 23, 1987. Lien determinations and ownership information submitted to DSL.
- ° January 20, 1988. DSL (Ben Mundie) review comments are received. No changes to draft plans and specifications are required.
- ° January 26, 1988. Final plans and specifications are submitted to the DSL and the BLM for review.

- ° February 1, 1988. BLM's signed Consent for Right of Entry to conduct the reclamation is submitted to DSL.
- ° March 17, 1988. Land use license is obtained from DSL to conduct mine reclamation on state owned property.
- ° March 18, 1988. Letter sent to DSL (Ben Mundie) requesting assignment of Mont. A/E and requisition numbers.
- ° September 2, 1988. Two copies of final plans and specifications submitted to DSL for review.
- ° September 19, 1988. Review comments on draft weed control plan are received from Beaverhead County Weed Control Board.
- ° October 31, 1988. Project is advertised for bid.
- ° November 7, 1988. Thirty copies of final plans and specifications are submitted to DSL for sale to bidders.
- ° November 16, 1988. On-site pre-bid conference.
- ° November 30, 1988. Bid opening.
- ° December 7, 1988. Notification of apparent low bidder submitted to DSL.

- ° December 19, 1988. Final weed control plan sent to Beaverhead County Weed Control Board for approval.
- ° December 27, 1988. DSL sends Notice of Award to Valley Excavating, Helena, MT.
- ° December 29, 1988. Agreement between DSL and Valley Excavating is signed.
- ° January 19, 1989. Hydrometrics sends copy of approved weed control plan to DSL.
- ° January 23, 1989. Pre-construction meeting held at Hydrometrics offices.
- ° June 22, 1989. Construction starts.
- ° Early August 1989. DSL verbally assigns Work Area 11 as extra work.
- ° August 25, 1989. Work Directive No. 1 submitted for DSL approval.
- ° September 1, 1989. Signed Consent for Right of Entry form submitted to DSL (John Koerth) for Work Area No. 11.

- ° September 1, 1989. Pay Request No. 1 and Change Order No. 1 are submitted to DSL for approval.
- ° September 20, 1989. Notification sent to DSL by Hydrometrics stating project work, except seeding, was completed by late August 1989.
- ° October 17, 1989. All sites are seeded.
- ° November 15, 1989. Final on-site inspection by Hydrometrics (Bob Braico) and DSL (John Koerth). Minor work identified and contractor notified by letter.
- ° February 7, 1990. Affidavit on Behalf of Contractor and Final Payment Request are signed by Contractor.
- ° February 13, 1990. Engineer certifies project as completed and recommends payment of Final Payment Request.

C) EQUIPMENT

- 1) Cat D-8 dozer
- 2) 931 Cat loader, 75 HP, 1.75 cy
- 3) 1950 dump truck, 225 HP, 10 cy
- 4) Straw blower
- 5) Lime spreader

- 6) Spreader 4x4 w/discs
- 7) Seeder

D) CONSTRUCTION OPERATIONS

- 1) Mobilization - Occurred as equipment was needed and available.

931 cat - 6/22/89

D-8 cat, dump truck - 6/28/89

Straw blower, lime spreader, spreader 4x4 w/discs -
8/10/89

Seeder - 10/17/89

- 2) Access road built
- 3) Debris cleanup
- 4) Stripped and salvaged topsoil
- 5) Closed adits and disposed of waste material.
- 6) Performed site gradings
- 7) Replaced topsoil
- 8) Applied lime
- 9) Applied fertilizer and mulch
- 10) Build farm fence
- 11) Seed applied

Earth work completed as follows:

6/23/89
Work Area No. 2

6/30/89
Work Area No. 3 and No. 4

7/7/89
Work Area No. 10

7/6/89
Work Area No. 11

7/10/89
Work Area No. 6

7/12/89
Work Area No. 7 and No. 8

7/13/89
Work Area No. 1

7/19/89
Work Area No. 9

8/15/89
Work Area No. 11

Lime, fertilizer and mulch completed between 8/10/89 and 8/15/89.

Seeding completed 10/17/89

E) SUBCONTRACTORS

Liming, mulching, fertilizing and seeding were completed by:

Bernie Schafer
Western Reclamation
30 Mountain Splendor Drive
Bozeman, MT 59715.

Fencing was completed by:

C. Terry French
French Construction
P. O. Box 4774
Helena, MT 59704.

F) SUPPLIERS

- 1) Limestone: Montana Limestone Company
P. O. Box 20177
Billings, MT, 59104
- 2) Fertilizer: Williams Feed Inc.
235 North Idaho
Dillon, MT 59725
- 3) Seed: Treasure State Seed Inc.
Box 656
Fairfield MT 59436

III. COST SUMMARY

- A) A copy of the Final Payment Request is contained in Appendix A. This document summarizes the final quantities and costs for each work item. The original total contract amount was \$47,566.28 and the amount of approved project change was \$14,508.74 for a total approved project cost of \$62,075.02. Actual total project cost was \$62,024.75.
- B) Change Order No. 1 - Reconciliation of Final Quantities
Change Order No. 1 was issued on August 30, 1989 to accommodate additional site work and changed site conditions. Change Order No. 1 was for \$14,508.74. No other change orders were issued.

C) Cost Per Unit

<u>Item</u>	<u>Unit Cost</u>	<u>Cost/ Acre</u>	<u>Application Rate</u>
D-8 Cat Craw- leg Tractor	\$ 170/hr.	--	--
931 Cat Tracked Loader	47.50/hr.	--	--
Tandern Axle 10 Yd. Dump Truck	49.60/hr.	--	--
Site Grading	\$ 0.10/sq. yd.	484.00	--
Fertilizer	\$ 0.16/lb.	--	--
Seed	\$ 6.50/lb.	110.50	17 PLS lbs/ac
Vegetative Mulch	\$ 0.50/lb.	1500.00	3000 lbs/ac
Farm Fence	\$ 1.00/LF	--	--
Access Road	\$ 0.40/LF	--	--
Lime	\$50.00/Ton	500.00	10T/ac
Mobilization	\$4000.00	--	--

* Includes \$388 estimated cost to complete this report.

Project cost per acre of reclamation was \$6,534.21. Project cost per site was \$5,643.18.

D) Consultant Cost vs. Construction Cost

The cost of engineering services for this project was \$47,484.95 or 76.5% of the total construction cost and includes the cost of preparing this report. Engineering costs for this project were high because of the remote location of the site (three hours

driving time from Helena, one way) and because of the slow and intermittent pace of construction.

IV. SUMMARY

A) COMPLETED RECLAMATION

The contract allowed forty-five (45) consecutive calendar days to complete the project. An additional 25 days was allowed under Change Order No. 1. The contractor used a total of 58 days to complete the work.

The project resulted in the removal of safety and environmental hazards due to 12 partially open portals and 11 eroding coal slack piles.

B) COMMENTS

The contractor completed the work in accordance with the specifications and with changes required in Change Order No. 1. He was easy to work with. However, this was his first reclamation contract, his workmen lacked substantive construction experience and sometimes used the limited available equipment inefficiently. Additional and more appropriate equipment with more experienced operators would have resulted in a much shorter construction period.

A significant change in the work occurred when the contractor placed salvaged topsoil on coal slack wastes prior to liming. Because the coal wastes were not highly acidic and because cover soils were very basic, an alternative was developed. The alternative was to apply 10 tons/acre to those areas where the cover soil was less than or equal to 3 inches. The lime was then mixed into the cover soil and underlying coal wastes to a depth of 6 inches.

Costs for reclamation of Work Area #11 were high because the site was added after all equipment had been returned to Helena. All work except fencing and revegetation activities had already been completed at the other sites.

Another problem experienced with the contractor was timely submittal of paperwork. Payment requests, certified payrolls and subcontractor notifications typically were slow in being submitted.

During construction, an additional small caved portal (Work Area No. 10) was found by the contractor adjacent to Work Area No. 4.

V. PHOTO LOG

Pre-construction, construction and job completion slides and prints are in Appendix B.

APPENDIX A.

FINAL PAYMENT REQUEST

FINAL PAYMENT REQUEST

From: September 1, 1989	To: February 1, 1990
Project Name: Ames Peterson	Project No.: Mont A/E 88-46-125
Location: Beaverhead County, Montana	Address: 5820 N. Montana Ave., Helena, MT 59601
Name of Contractor: Valley Excavating	

Summary Of Project Status

Amount of Original Contract	\$47,566.28
Amount of Approved Change Order(s)	14,508.74
TOTAL CONTRACT AMOUNT	62,075.02
Contract Time Used to Date	75 Days
Percentage of Contract Time Used	100 %
Percentage of Contract Amount Earned	100 %

Original Contract Amount Completed	\$46,929.28
Change Order(s) Amount Completed	15,095.47
Amount for Materials On Site	0.00
TOTAL To Date	62,024.75
Times 90%	55,822.28
TOTAL AMOUNT Earned To Date	62,024.75
Less Previous Amount Earned	60,133.75
Amount Payable This Period	1,891.00
Less 1% Gross Receipts Tax	18.91
TOTAL DUE CONTRACTOR THIS PERIOD	1,872.09

Requested By: Valley Excavating	<u>Larry Dean Smith</u> (Contractor)	Date: <u>2/7/90</u>
Checked By: Hydrometrics	<u>Robert D. Smith</u> (Engineer)	Date: <u>2/7/90</u>
Approved By: Department of State Lands Abandoned Mine Reclamation Bureau	<u>Donna M. Marshall</u> (Owner)	Date: <u>2/4/90</u>

FINAL PAYMENT REQUEST

Project: Ames Peterson

MONT A/E 88-36-125

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	% OF EST. QUAN. COMP.
1	Mobilization	1 LS	4000.00	1	1	4000.00	100.00
2	Debris Clean Up	1 LS	2800.00	1	1	2800.00	100.00
3*	Salvage and Replace Soil	17085	1	19,106.35	19,106.35	19,106.35	--
4*	Waste Pile Disposal	Revised by Change Order No. 1				--	--
5*	Site Grading	27190 YD	0.10	47141.60	47141.60	4714.16	173.00
6	Fertilizer	283 LB	0.16	974.00	974.00	155.84	344.17
7	Seed	98.0 LB	6.50	164.00	164.00	637.00	167.35
8	Vegetative Mulch	16710 LB	0.50	28520.00	28520.00	14260.00	170.68
9	Farm Fence	7830 FT	1.00	11775.00	11775.00	11775.00	150.38
10	Access Road	3200 FT	0.40	250.00	250.00	100.00	7.81
11	Lime	56.3 TON	50.00	53.8	53.8	2690.00	95.56

TOTAL ORIGINAL CONTRACT	46929.28
TOTAL CHANGE ORDER NO. 1	
(THIS PAGE)	13735.00

	60664.35

TOTAL FROM PAGE 1

60664.35

Change Order No. 1

Items 3 & 4: Sites #1 - #10

a) D-8 Cat Crawler Tractor*	107 hrs.	170 **	\$18190.00
b) 931 Cat Tracked Loader*	6.50 hrs.	47.50 ***	308.75
c) Truck - 10 yd. capacity*	12.25 hrs.	49.60 ***	607.60

Included in Item 3 (pg. 1)			19106.35

Change Order No. 1

Items 3 & 4: Site #11

a) 931 Cat Tracked Loader*	21.50	49.60	1066.40
b) Labor*	14.00	21.00	294.00

			1360.40

1360.40

Work Completed Since Last

Payment Request (September 1, 1990)

Seed: Original Contract	98 lbs.	6.50	637.00
Change Order No. 1	66 lbs.	6.50	429.00

Subtotal for Seed			1066.00

Fence: Change Order No. 1			
(for site 11)	828 LF	1.00	825.00

Subtotal for Items completed since Last Payment Request	1891.00
---	---------

TOTAL CONTRACT AMOUNT INCLUDING CHANGE ORDER NO. 1

62024.75

* Items Done on Hourly Basis

** AGC Hourly Rental Rate Without Operator

*** AGC Hourly Rental Rate with Operator

ANNE/PETERSON 10/17/89

weather: sunny with 50's
received call from Bernie Jensen that
he was seeding today @ ~ 9:30am.
He had called from Dillon.
11:00am - left Helena

13:45 - arrived on site. Bernie was
finishing site #②. Had already seeded
sites ③④⑤⑥.

14:00 hrs received seed bags from
Bernie. 188 lbs of bulk seed to be planted.

$PLS = [Σ(P_{ij} \cdot A_{ij}) \cdot (G_{ij})]$ 38 lbs.
= $[9810(0.49) + 0.97(1.2610) + (99817/698)] 198 - 173$ lbs.

14:45 Bernie finished sites ⑦⑧. Loaded
seed and headed for site ⑪

15:30 hrs Arrived @ site ⑪

16:00 hrs Finished and left site ⑪

16:40 hrs Arrive @ site ①

$PLS/Ac = 173$ lbs $PLS/9.47Ac = 18.3$ lbs PLS/Ac .

16:45 hrs start seeding site ①

17:45 hrs finished site ①

18:00 hrs start seeding site ①

Before beginning seeding Bernie
calibrated seeders.

18:40 hrs finish site ①

18:45 start on site ②

David March

1905 hrs finish site ② Bernie
heads to finish closing fences on
first couple sites. 1 head for
hauled.

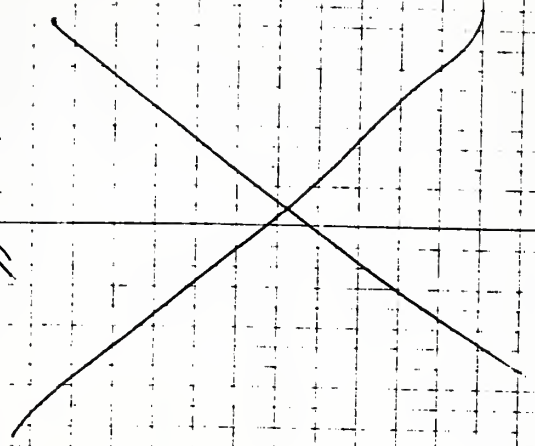
Some seed left over approximately
10 lbs. ② PLS used = 164 lbs.

164 lbs / 9.47 Ac = 17.3 R lbs PLS/Ac. ②

2200 hrs Arrive in Helena.

Pictures not taken of seeding equipment.

David March



Wed 8/14/89

START 7:00 hrs.

Arrive on site 8:00 hrs.

Help Larry mark corners for
fence on (11) length = 228'

Rec'd film 8/15 - 8/16

1-12

510

11

13

9

14

5

15

1

16

7

17

3

18

4

19

5 (10)

20

6

21

6 (8)

22

6

23

stray sprayer

24

Twin

Re. dgs. Co. up

25

David March

24 Bails of straw still
sitting on site #6

David March

File: DSC
Ames/Peterson
Admin

Secar Bluebunch Wheatgrass
Lot No.: 9-WG-3

Purity: 98.10
Crop: 0.45

Weed: 0.07
Noxious: None
Inert: 1.38

Germ: 94
Hard Seed: 0.00
Total: 94

Tested: 10/88
Origin: WA
Net Wt.: 50#

Secar Bluebunch Wheatgrass
Lot No.: 9-WG-3

Purity: 98.10
Crop: 0.45

Weed: 0.07
Noxious: None
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